

CLAIMS

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A vehicle mounted device configured to transmit real time vehicle position data from said device to a network-based server for fleet management purposes using a wireless communication system in communication with said network-based server and with said device, comprising:

a first processing module carried by a vehicle for computing real time vehicle position data reflecting real time geographic [location] locations of said vehicle, said first processing module including a positioning system receiver for receiving position signals from at least one source remote from said vehicle and for processing said position signals into said real time vehicle position data representing the [date, time, and] position of said vehicle at a specific time and date;

a second processing module in communication with said first processing module and configured for receiving and for storing said real time vehicle position data and for controlling transmission of said real time vehicle position data to said network-based server, said second processing module including data storage means for receiving, storing and sending said real time vehicle position data, wireless communication system connecting means for connecting to and wirelessly transmitting said real time vehicle position data to a receiver of a [said] wireless communication system, and control means connected to said data storage means and to said wireless communication system for controlling transmission of said real time vehicle position

data to said receiver and said network-based server, said control means being connected to and configured to:

[receive] cause said real time vehicle position data to be received from said first processing module,

[establish] cause a wireless connection to said network-based server to be established for a predetermined period of duration,

[detect the]cause detection of establishment of [a] said wireless connection,

[transmit] cause said real time vehicle position data to be transmitted to said network-based server during periods when said wireless connection is established,

[store] cause said real time vehicle position data to be stored in said data storage means when said wireless connection is not established,

[reestablish] cause said wireless connection to said network-based server to be reestablished following any period that said wireless connection is broken, and

[retrieve] cause said stored real time vehicle position data to be retrieved from said data storage means following reestablishment of said wireless connection, and thereafter transmit said stored real time vehicle position data to said network-based server,

said wireless communication system connecting means including a short-range wireless chipset and a built-in antenna housed within said second processing module and a wireless telephone having a compatible short-range wireless chipset and an antenna housed within said wireless telephone, wherein said short-range wireless chipset is configured for wireless communication between said second processing module and said wireless telephone and wherein

said wireless telephone is configured for wireless communication with said receiver of said wireless communication system;

a power supply means connected for powering said first processing module and said second processing module;

a first conductor means connected to said power supply means and to said second processing module, said first conductor means being configured to transmit power from said power supply means to said second processing module; and

a second conductor means connected to said first processing module and to said second processing module, said second conductor means being configured to transmit said real time vehicle position data from said first processing module to said second processing module and being further configured to transmit power from said second processing module to said first processing module;

whereby said vehicle mounted device, in conjunction with said network-based server, enables any one or more of a plurality of fleet managers to simultaneously access said network-based server via a network service provider and thereafter monitor[the current and historical] said read time vehicle position data and said stored real time vehicle position data corresponding to a fleet of vehicles designated to be monitored by a corresponding one of said any one or more of[a] said plurality of fleet managers.

2. (Currently Amended) The vehicle mounted device of claim 1 further including event sensor means attached to said vehicle, wherein said second processing module further includes at least one sensory input connected to said control means, wherein said at least one sensory input

[being] is connected to said event sensor means for detecting the occurrence of an event involving[the] said vehicle and transmitting information regarding said event to said sensory input, and wherein said event sensor means [being] is positioned on said vehicle.

3. (Currently Amended) The vehicle mounted device of claim 2, wherein said first conductor means has a first power cable connected to said power supply means and to said second processing module, and wherein said second conductor means has a data bus and a second power cable, said second power cable being connected to said first processing module.

4. (Original) The vehicle mounted device of claim 3, wherein said control means is selected from the group consisting of a microcontroller, a microprocessor and an ASIC device, wherein said data storage means is an electrically erasable programmable memory, wherein said positioning system receiver is a global positioning system ("GPS") receiver, and wherein said at least one source remote from said vehicle is a plurality of GPS satellites.

5. (Original) The vehicle mounted device of claim 4, wherein said wireless communication system is selected from the group consisting of wireless LAN/WAN, AMPS, Satellite, iDEN.TM., TDMA, CDMA, CDPD and GSM infrastructures.

6. (Currently Amended) The vehicle mounted device of claim 5, wherein said control means is further configured and connected to initialize all memory and data ports and said data storage means upon start-up of said vehicle mounted device, enable [of] interrupts and check for

the presence and functionality of all hardware and operational modes of said vehicle mounted device, load operational setup parameters stored in said data storage means and check for the presence of real time vehicle position data stored in said data storage means.

7. (Currently Amended) The vehicle mounted device of claim 6, wherein said network-based server is a computer and wherein said network is one of [either] the Internet network [or] and the Intranet network.

8. (Original) The vehicle mounted device of claim 7, wherein said first module is positioned within a first housing, wherein said second module is positioned within a second housing, and wherein said power supply means is selected from the group consisting of a plug configured for insertion into a vehicle cigarette lighter, a wire connected to a fuse panel terminal, a wire connected to a vehicle storage battery, and a battery.

9. (Original) The vehicle mounted device of claim 8, further including receiving means for receiving incoming signals transmitted by said network-based server, said incoming signals including any one or more of ICMP ping messages, configuration messages, or poll messages.

10. (Currently Amended) The vehicle mounted device of claim 9 wherein said control means is further configured and connected to cause [update] said setup parameters to be updated in response to receiving a configuration message, wherein said control means is further

configured and connected to cause [immediately transmit] said real time vehicle position data to be transmitted to said network-based server in response to receiving a poll message.

11. (Currently Amended) The vehicle mounted device of claim 10, wherein said control means is further configured and connected to cause [transmit] said real time vehicle position data to be transmitted to said network-based server at predetermined intervals, said intervals being selected from the group consisting of distance intervals and time intervals.

12. (Currently Amended) The vehicle mounted device of claim 11, wherein said control means is further configured and connected to cause [transmit] said real time vehicle position data to be transmitted to said network-based server upon the occurrence of predetermined triggers, said triggers being selected from the group consisting of speed triggers, vehicle start triggers, vehicle stop triggers and sensory input triggers.

13. (Currently Amended) The vehicle mounted device of claim 12, wherein said control means is further configured and connected to cause [establish] a wireless connection to said [network based] network-based server to be established for predetermined time intervals.

14. (Currently Amended) The vehicle mounted device of claim 1, wherein said control means is further configured and connected to cause [add] an identification code, that uniquely identifies the vehicle mounted device, to be added to said real time vehicle position data and to transmit said identification code along with said real time vehicle position data.

15. (Currently Amended) A method for transmitting vehicle position data to a network-based server for fleet management purposes using a vehicle position locating device carried by a vehicle located remotely from said network-based server and a wireless communication system in communication with both said network-based server and said vehicle position locating device, said method comprising the steps:

establishing a wireless connection between [the] said vehicle position locating device and [the] said network-based server located remote from said vehicle position locating device;

receiving position signals by said vehicle position locating device from at least one source remote from said vehicle and date, [and] time, processing said position signals into vehicle position data representing [date, time, and the] at least one of the position, velocity and direction of travel of said vehicle at a specific time and date;

detecting whether said wireless connection is established;

transmitting said vehicle position data to said network-based server during periods when said wireless connection is established;

storing said vehicle position data to a storage device when said wireless connection is not established;

reestablishing said wireless connection following any period that said wireless connection is broken; and

retrieving said stored vehicle position data from said storage device following reestablishment of said wireless connection, and thereafter transmitting said stored vehicle position data to said network-based server;

whereby said vehicle [mounted] position locating device, in conjunction with said network-based server, enables any one or more of a plurality of fleet managers to simultaneously access said network-based server via a network service provider and thereafter monitor [the current and historical real time] said vehicle position data and said stored vehicle position data corresponding to a fleet of vehicles designated to be monitored by a corresponding one of said any one or more of [a] said plurality of fleet managers;

wherein said vehicle position locating device comprises:

a first processing module carried by [a] said vehicle for computing said [real time] vehicle position data reflecting a [real time] geographic location of said vehicle at a specific time, said first processing module including a positioning system receiver for receiving position signals from at least one source remote from said vehicle and for processing said position signals into said [real time] vehicle position data representing the [date, time, and] position of said vehicle at said specific time;

a second processing module in communication with said first processing module and configured for receiving and for storing said [real time] vehicle position data and for controlling transmission of said [real time] vehicle position data to said network-based server, said second processing module including data storage means for storing said [real time] vehicle position data, wireless communication system connecting means for connecting to and transmitting said vehicle position data to said wireless communication system, and control means connected to said data storage means and said wireless communication system connecting means for controlling transmission of said [real time] vehicle position data to said network-based server, said control means being connected and configured to:

cause [receive] said[real time] vehicle position data to be received from said first processing module,

cause [establish] a wireless connection to said network-based server to be established for a predetermined period of duration,

cause [detect the establishment of] detection of said wireless connection,

cause [transmit] said[real time] vehicle position data to be transmitted to said network-based server during periods when said wireless connection is established,

cause [store] said[real time] vehicle position data to be stored in said data storage means when said wireless connection is not established,

cause [reestablish] said wireless connection to said network-based server to be established following any period that said wireless connection is broken, and

cause [retrieve] said [stored real time] vehicle position data to be retrieved from said data storage means following reestablishment of said wireless connection, and thereafter transmit said stored [real time] vehicle position data to said network-based server,

said wireless communication system connecting means including a short-range wireless chipset and a built-in antenna housed within said second processing module and a wireless telephone having a compatible short-range wireless chipset and an antenna housed within said wireless telephone, wherein said short-range wireless chipset is configured for wireless communication between said second processing module and said wireless telephone and wherein said wireless telephone is configured for wireless communication with said wireless communication system;

a power supply means connected for powering said first processing module and said second processing module;

a first conductor means connected to said power supply means and to said second processing module, said first conductor means being configured to transmit power from said power supply means to said second processing module; and

a second conductor means connected to said first processing module and to said second processing module, said second conductor means being configured to transmit said vehicle position data from said first processing module to said second processing module and being further configured to transmit power from said second processing module to said first processing module.

16. (Original) The method of claim 15, wherein said at least one source is a plurality of GPS satellites.

17. (Original) The method of claim 16, wherein said network-based server is a computer and wherein said network is the Internet.

18. (Currently Amended) The method of claim 15, [wherein said method] further [includes addition of] including generating and transmitting an identification code, that uniquely identifies the vehicle[mounted] position locating device,[to said vehicle position data and to transmit said identification code] along with said vehicle position data.

19. (New) A device for mounting on a moveable object, said device being configured to transmit real time data and said device comprising:

a first processing module carried by an object to compute real time data reflecting a real time geographic location of said object, said first processing module including a positioning system receiver configured to receive position signals from at least one source remote from said object and to process said position signals into said real time data representing at least one of date, time and position of said object;

a second processing module in communication with said first processing module and configured to receive and store said real time data and to control transmission of said real time data to a network-based server, said second processing module including a data storage device to store said real time data, a communication system connected to transmit said real time data to a wireless communication system, and a controller connected to control transmission of said real time data to said network-based server, said controller being connected and configured to:

cause said real time data to be received from said first processing module,

cause a wireless connection to said network to be established-based server for a set period of time,

cause detection of said wireless connection,

cause said real time data to be transmitted to said network-based server during periods when said wireless connection is established at predetermined intervals when said object travels for at least one of a set time period and a set distance,

cause said real time data to be stored in said data storage device when said wireless connection is not established,

cause said wireless connection to said network-based server to be reestablished following any period that said wireless connection is broken, and

cause said stored real time data to be retrieved from said data storage device following reestablishment of said wireless connection, and thereafter transmit said stored real time data to said network-based server,

said communication system connector being configured for communication between said second processing module and said wireless communication system;

a power supply to power said first processing module and said second processing module;

a first conductor connected to said power supply and to said second processing module, said first conductor being configured to transmit power from said power supply to said second processing module; and

a second conductor connected to said first processing module and to said second processing module, said second conductor being configured to transmit said real time data from said first processing module to said second processing module and being further configured to transmit power from said second processing module to said first processing module,

said device and said network-based server enabling at least one of a plurality of fleet managers to simultaneously access said network-based server via a network service provider and thereafter monitor the real time data and stored real time data corresponding to at least one of a fleet of objects designated to be monitored by a corresponding one of said plurality of fleet managers.

20. (New) The device of claim 19, further including an event sensor attached to said object and configured to sense one of a mechanical and electrical event involving said object, wherein said second processing module further includes at least one sensory input connected to said controller, said at least one sensory input being connected to said event sensor for transmitting information from said event sensor regarding said event to said sensory input.

21. (New) The device of claim 19, wherein said controller is selected from the group consisting of a microcontroller, a microprocessor and an ASIC device, wherein said data storage device is an electrically erasable programmable memory, wherein said positioning system receiver is a global positioning system receiver, and wherein said at least one source remote from said object is a plurality of global positioning system satellites.

22. (New) The device of claim 19, further including a receiving device to receive incoming signals transmitted by said network-based server, said incoming signals including at least one of ICMP ping messages, configuration messages, and poll messages.

23. (New) The device of claim 19, wherein said controller is further configured to update setup parameters in response to receiving a configuration message, wherein said controller is further configured to immediately transmit said real time data to said network-based server in response to receiving a poll message.

24. (New) The device of claim 19, wherein said controller is further configured to transmit said real time data to said network-based server upon the occurrence of predetermined triggers, said triggers including at least one of a speed trigger, an object start trigger, an object stop trigger and a sensory input triggers.

25. (New) The device of claim 19, wherein said controller is further configured to generate an identification code that uniquely to said device and to transmit said identification code along with said real time data.

26. (New) A system for tracking the location of objects comprising:
a network-based server;
a device carried by the object and configured to transmit real time data, the device including:
a first processing module to compute said real time data reflecting a real time geographic location of said object, said first processing module including a positioning system receiver to receive position signals from at least one remote source remote and to process said position signals into said real time data representing the position of said object at a select time; and
a second processing module to store said real time data and to control transmission of said real time data to said network-based server, said second processing module including a data storage device to store said real time data, a communication system connected to receive and to wirelessly transmit real time data to a wireless communication system transceiver connected to the network of said network-

based server, and a controller to control transmission of said real time data to said
network based server, said controller being configured to
receive said real time data from said first processing module,
establish a wireless connection to said network-based server for a set
period of duration,
detect establishment of said wireless connection,
transmit said real time data to said network-based server during periods
when said wireless connection is established,
store said real time data in said data storage device when said wireless
connection is not established,
reestablish said wireless connection to said wireless communication
system receiver following any period that said wireless connection
is not established, and
retrieve said stored real time data from said data storage device following
reestablishment of said wireless connection, and thereafter transmit
said stored real time data to said network-based server; and
a power supply for supplying power via a first conductor connected to said second
processing module and from said second processing module via a second
conductor connected to said first processing module; and
said network-based server being connected to a network and said network based server being
configured to supply a configuration message via said network and said wireless
communication system receiver to said second processing module and to said controller

to change the interval at which said real time data is transmitted from the device to said network-based server.

27. (New) The system of claim 26, wherein the controller transmits said real time data to said network-based server during periods when said object travels for at least one of a set time period and a set distance.

28. (New) The system of claim 26, further including an event sensor attached to said object, wherein said second processing module further includes at least one sensory input connected to said controller, said at least one sensory input being connected to said event sensor for detecting the occurrence of an event involving said object and transmitting information regarding said event to said sensory input.

29. (New) The system of claim 26, wherein said controller is selected from the group consisting of a microcontroller, a microprocessor and an ASIC device, wherein said data storage device is an electrically erasable programmable memory, wherein said positioning system receiver is a global positioning system receiver, and wherein said at least one source remote from said object is a plurality of global positioning system satellites.

30. (New) The system of claim 26, further including a receiving device to receive incoming signals transmitted by said network-based server, said incoming signals including at least one of ICMP ping messages, configuration messages, or poll messages.

31. (New) The system of claim 26, wherein said controller is further configured to update setup parameters in response to receiving a configuration message, wherein said controller is further configured to immediately transmit said real time data to said network-based server in response to receiving a poll message.

32. (New) The system of claim 26, wherein said controller is further configured to transmit said real time data to said network-based server upon the occurrence of predetermined triggers, said triggers including at least one of a speed trigger, an object start trigger, an object stop trigger and a sensory input trigger.

33. (New) The system of claim 26, wherein said controller is further configured to add an identification code that uniquely identifies the device to said real time data and to transmit said identification code along with said real time data.

34. (New) A system for tracking the location of objects comprising:
a network-based server connected to a network;
a device carried by the object and configured to transmit real time data, the device including:
a first processing module to compute said real time data reflecting a real time geographic location of said object, said first processing module including a positioning system receiver to receive position signals from at least one remote source remote

and to process said position signals into said real time data representing the position of said object at a select time; and

a second processing module connected to said first processing module and configured to store said real time data and to control transmission of said real time data to said network-based server, said second processing module including a data storage device to store said real time data, a communication system connected to receive and to wirelessly transmit real time data to a wireless communication system transceiver connected to said network of said network-based server, and a controller to control data storage and to control transmission of said real time data to said network based server, said controller being configured to

receive said real time data from said first processing module,

establish a wireless connection to said network-based server for a set period of duration,

detect establishment of said wireless connection,

transmit said real time data to said network-based server during periods when said wireless connection is established,

store said real time data in said data storage device when said wireless connection is not established and to overwrite the least recent data entry with the most recent real time data when all storage of said data storage device is full,

reestablish said wireless connection to said wireless communication
system receiver following any period that said wireless connection
is not established, and
retrieve said stored real time data from said data storage device following
reestablishment of said wireless connection, and thereafter transmit
said stored real time data to said network-based server; and
a power supply for supplying power via a first conductor connected to said second
processing module and from said second processing module via a second
conductor connected to said first processing module.

35. (New) A device for mounting on a vehicle, said device being configured to transmit
data , said device comprising:
a first processing module carried by said vehicle to compute data reflecting a geographic location
of said vehicle, said first processing module including a global positioning system (GPS)
receiver for receiving position signals from remote GPS transmitters and for computing a
plurality of sequential position signals of said vehicle each at a date and time;
a second processing module connected to said first processing module to receive and store said
sequential position signals and to control transmission of said sequential position signals
to a network-based server,
said second processing module including a data storage device to store sequential
position signals not transmitted to said network based server,
a communication system connected to transmit said sequential position signals to a
wireless communication system, and

a controller connected to control transmission of said sequential position signals to said network-based server, said controller being connected and configured to cause: said sequential position signals to be received from said first processing module, a wireless connection to said network-based server to be established for a set period of time, detection of said wireless connection, said sequential position signals to be transmitted to said network-based server during periods when said wireless connection is established at predetermined intervals when said vehicle travels for one of a set time period and a set distance, said sequential position signals to be stored in said data storage device when said wireless connection is not established, said wireless connection to said network-based server to be reestablished following any period that said wireless connection is not established, and to cause said stored sequential position signals to be retrieved from said data storage device following reestablishment of said wireless connection, and thereafter cause transmission of said stored sequential position signals to network-based server, and

a power supply connected by first conductor means to said second processing module to transmit power to said second processing module; and by second conductor means to said first processing module to transmit said sequential position signals from said first processing

module to said second processing module and being further configured to transmit power from said second processing module to said first processing module.